Storage System Site Planning Guide

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Contents

CHAPTER 1

Planning for Installation

This guide describes facilities and system requirements for installing a Phoenix RPC12 storage system, and applies to the following models:

69501 and 69521 FC Controller Enclosures
69503 and 69523 iSCSI Controller Enclosures
69701 and 69721 FC Controller Enclosures
69502 and 69522 SAS Expansion Enclosures

This chapter outlines the site-planning and basic safety requirements for installing Phoenix storage systems.

Topics covered in this chapter include:

As you review the details in this chapter, complete the preinstallation worksheets provided in Appendix A to ensure that your site meets all of the requirements. These sheets also provide space for recording configuration settings as you make them.

Before You Read This Book

Before preparing your site for the system, read the *Release Notes* for your controller enclosure, which list the supported operating systems, host platforms, software, and racks.

Layout Map

To simplify planning, create a sketch or layout map to indicate the:

Exact location of the system.

Location of the management and data hosts.

All cabling connections between them. As you lay out the components, consider the cable lengths that you will use.

Your Responsibilities

You must inform your hardware supplier of any and all ordinances and regulations that might affect the installation.

You are responsible for meeting all government codes and regulations concerning facilities. You are also responsible for the following:

Meeting all local, national, and international codes.

All site requirements described in Chapter 2.

Documenting and informing your hardware supplier of any deviations from the site requirements in Chapter 2.

Safety Requirements

Install the system in accordance with the local safety codes and regulations at the facility site. Follow all cautions and instructions marked on the equipment.

Site Requirements and Guidelines

The following sections provide requirements and guidelines that you must address when preparing your site for the installation.

Caution – When selecting an installation site for the system, choose a location not subject to excessive heat, direct sunlight, dust, or chemical exposure. These conditions greatly reduce the system's longevity and might void your warranty.

Site Wiring and AC Power Requirements

The following are required for all installations:

All AC mains and supply conductors to power distribution boxes for the rack-mounted system must be enclosed in a metal conduit or raceway when specified by local, national, or other applicable government codes and regulations.

Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.

To ensure redundancy, provide two separate power sources for the enclosures. These power sources must be independent of each other, and each must be controlled by a separate circuit breaker at the power distribution point.

The system requires voltages within minimum fluctuation. The customer-supplied facilities' voltage must maintain a voltage with not more than ± 5 percent fluctuation. The customer facilities must also provide suitable surge protection.

Site wiring must include an earth ground connection to the AC power source. The supply conductors and power distribution boxes (or equivalent metal enclosure) must be grounded at both ends.

Power circuits and associated circuit breakers must provide sufficient power and overload protection. To prevent possible damage to the AC power distribution boxes and other components in the rack, use an external, independent power source that is isolated from large switching loads (such as air conditioning motors, elevator motors, and factory loads).

Weight and Placement Guidelines

Refer to “Physical Requirements” on page 11 for detailed size and weight specifications. As you prepare your installation site, be aware of these guidelines:

Ideally, use two people to lift an enclosure. However, one person can safely lift an enclosure if its weight is reduced by removing the power and cooling modules and drive modules.

Do not place enclosures in a vertical position. Always install and operate the enclosures in a horizontal orientation.

When installing enclosures in a rack, make sure that any surfaces over which you might move the rack can support the weight. To prevent accidents when moving equipment, especially on sloped loading docks and up ramps to raised floors, ensure you have a sufficient number of helpers. Remove obstacles such as cables and other objects from the floor.

To prevent the rack from tipping and to minimize personnel injury in the event of a seismic occurrence, securely anchor the rack to a wall or other rigid structure that is attached to both the floor and to the ceiling of the room.

Electrical Guidelines

As you prepare your installation site, follow these guidelines:

These enclosures work with single-phase power systems having an earth ground connection. To reduce the risk of electric shock, do not plug an enclosure into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

Enclosures are shipped with a grounding-type (three-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet.

Do not use household extension cords with the enclosures. Not all power cords have the same current ratings. Household extension cords do not have overload protection and are not meant for use with computer systems.

Ventilation Requirements

Refer to “Environmental Requirements” on page 12 for detailed environmental requirements. As you prepare your installation site, follow these requirements:

Do not block or cover ventilation openings at the front and rear of an enclosure. Never place an enclosure near a radiator or heating vent. Failure to follow these guidelines can cause overheating and affect the reliability and warranty of your enclosure.

Leave a minimum of 6 inches (15 cm) at the front and back of each enclosure to ensure adequate airflow for cooling. No cooling clearance is required on the sides, top, or bottom of enclosures.

Leave enough space in front and in back of an enclosure to allow access to enclosure components for servicing. Removing a component requires a clearance of at least 15 inches (37 cm) in front of and behind the enclosure.

Cabling Requirements

As you prepare your installation site, follow these requirements:

Keep power and interface cables clear of foot traffic. Route cables in locations that protect the cables from damage.

Route interface cables away from motors and other sources of magnetic or radio frequency interference.

Stay within the cable length limitations.

Management Host Requirements

A local management host with at least one serial port connection is required for the initial installation and configuration of a controller enclosure. After you configure one or both of the controller modules with an Internet Protocol (IP) address, you then use a remote management host on an Ethernet network to configure, manage, and monitor.

Note – You must use Ethernet cable designated CAT-5 or higher to connect a controller enclosure to an Ethernet network.

CHAPTER 2

Site Requirements

This chapter provides the site requirements for Phoenix storage systems.

The topics covered in this chapter are:

Physical Requirements

The floor space at the installation site must be strong enough to support the combined weight of the rack, controller enclosures, expansion enclosures, and any additional equipment. The site also requires sufficient space for installation, operation, and servicing the enclosures, and also requires sufficient ventilation to allow a free flow of air to all enclosures.

Table 2-1 and Table 2-2 list enclosure dimensions and weights. Weights are based on an enclosure having no drive modules, 1 or 2 controller or expansion modules, and 2 power and cooling modules installed.

Table 2-1 Rackmount Enclosure Dimensions

Specification	Rackmount
Height	3U 5.15 inches (13.0 cm)
Width:	
• Chassis excluding mounting ears	17.0 inches (43.2 cm)
• Chassis including mounting ears	19.0 inches (48.3 cm)
Depth:	
• Chassis	20.8 inches (52.8 cm)
• To back of controller module handle	21.8 inches (55.4 cm)

Table 2-2 Rackmount Enclosure Weights

Product	Specification	Rackmount
Phoenix 69500 Series	69501 FC Controller Enclosure (No Drives)	43.0 lb (19.5 kg))
	69521 FC Controller Enclosure (No Drives))	47.0 lb (21.3 kg)
	69502 SAS Expansion Enclosure (No Drives)	41.5 lb (18.8 kg)
	69522 SAS Expansion Enclosure (No Drives)	44.0 lb (20.0 kg)
Phoenix 69700 Series	69701 FC Controller Enclosure (No Drives)	43.5 lb (19.7 kg)
	69721 FC Controller Enclosure (No Drives)	47.5 lb (21.5 kg)

Environmental Requirements

Table 2-3 lists the environmental conditions in which a rackmounted enclosure operates.

Table 2-3 Operating Environmental Specifications

Specification	Range
Altitude	To 10000 feet (3048 meters), conventional drives To 45000 feet (13716 meters), sealed drives
Relative Humidity	5% to 95% RH, non condensing
Temperature	41° F to 122° F (5° C to 50° C), conventional drives -4° F to 158° F (-20° C to 70° C), sealed drives
Shock	60 g, 2 ms
Vibration	0.5 g, 10Hz to 500 Hz

Electrical Requirements

This section provides site wiring and power requirements.

Site Wiring and Power Requirements

Each enclosure has two power and cooling modules for redundancy. If full redundancy is required, use a separate power source for each module. The AC power supply unit in each power and cooling module is auto-ranging and is automatically configured to an input voltage range from 90–264 VAC with an input frequency of 40–440 Hz. The power and cooling modules meet standard voltage requirements for both U.S. and international operation. The power and cooling modules use standard industrial wiring with line-to-neutral or line-to-line power connections.

Power Cord Requirements

Each enclosure is shipped with two AC power cords that are appropriate for use in a typical outlet in the destination country. Each power cord connects one of the power and cooling modules to an independent, external power source. To ensure power redundancy, connect the two power cords to two separate circuits; for example, to one commercial circuit and one uninterruptible power source (UPS).

APPENDIX A

Storage System Installation and Configuration Worksheets

Before installing the RPC12 storage system, complete the worksheets on the following pages, and then prepare the site for installation according to the site planning requirements.

You are responsible for ensuring that the site conforms to all stipulated standards, and that necessary peripherals are made available to the engineer during installation.

You must ensure that the appropriate service outlets are available for installation. Requirements vary.

Review the details on the worksheets before installing the storage system.

If necessary, sketch or attach a network diagram to the worksheet.

Note – Some values, Node WWNs and MAC addresses for example, are not accessible until you power on your storage system. Refer to the *CLI Reference Manual* for instructions on viewing these values.

Storage System Configuration Worksheet

Use the worksheet in TABLE A-1 to record the values for configuring your storage system.

TABLE A-1 Storage System Configuration Worksheet

Storage System or Network Component	Value
Enclosure node World Wide Name (WWN):	
Name server domain name:	
Controller A values **Serial number:**	
Node WWN:	
IP address:	
IP subnet mask:	
Gateway IP address:	
FC host port values 69501 FC Controller Enclosures and 69701 FC Controller Enclosures only **Port 0 (69501/69701)** **Port WWN:**	
Port 1 (69501/69701) **Port WWN:**	
Port 2 **Port WWN: (5730)**	
Port 3 **Port WWN: (5730)**	

TABLE A-1 Storage System Configuration Worksheet

Storage System or Network Component		Value *(Continued)*
iSCSI host port values 69503 iSCSI Controller Enclosures only		
Port 0	**MAC address:**	
	IP address:	
	IP subnet mask:	
	Gateway IP address:	
Port 1	**MAC address:**	
	IP address:	
	IP subnet mask:	
	Gateway IP address:	
Controller B values **Serial number:**		
Node WWN:		
IP address:		
IP subnet mask:		
Gateway IP address:		

TABLE A-1 Storage System Configuration Worksheet

Storage System or Network Component	Value *(Continued)*
FC host port values 69501 FC Controller Enclosures and 69701 FC Controller Enclosures only	
Port 0 (69501/69701) **Port WWN:**	
Port 1 (69501/69701) **Port WWN:**	
Port 2 **Port WWN: (5730)**	
Port 3 **Port WWN: (5730)**	
iSCSI host port values 69503 iSCSI Controller Enclosures only	
Port 0 **MAC address:**	
IP address:	
IP subnet mask:	
Gateway IP address:	
Port 1 **MAC address:**	
IP address:	
IP subnet mask:	
Gateway IP address:	
Email notification values **Email notification addresses:**	
Domain name server (DNS) IP address:	
Mail server IP address:	

Host and Switch Configuration Worksheets

Use the worksheets in the tables below to record the values for configuring management hosts, data hosts, and switches. If your configuration includes more than one host or switch, duplicate the required tables.

Refer to the *Release Notes* for your storage system to make sure that your host system HBAs and switches are supported.

TABLE A-2 Management Host Configuration Worksheet

Management Host Component	Value
Host name:	
Vendor:	
Model:	
Operating system:	
Patch or service pack:	
IP address:	
IP subnet mask:	
Gateway IP address:	

TABLE A-3 Data Host Configuration Worksheet

Data Host Component	Value
Host name:	
Vendor:	
Model:	
Operating system:	
Patch or service pack:	
FC HBA values 69501 FC Controller Enclosures and 69701 FC Controller Enclosures only **Model:**	
Driver:	
Port 0 WWN:	
(If present) Port 1 WWN:	
iSCSI HBA values 69503 iSCSI Controller Enclosures only **Model:**	
Driver:	
Port 0 IP address:	
(If present) Port 1 IP address:	

TABLE A-4 Switch Configuration Worksheet

Switch Component	Value
Vendor:	
Model:	
Firmware version:	
Number of zones and ports:	
Port connections: List switch ports and the storage-system or data-host ports to which they will be connected.	
Switch management IP address:	

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